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ABSTRACT

This paper explores the patterns and processes used by adult students of English as a second language (ESL) when they guess at the meanings of nonsense words in a reading text. The findings suggest that while word-unit processing is a major component of both first- and second-language reading, a major difference between first- and second-language readers is that the latter will not have confidence in their judgment that a word is familiar or unfamiliar, and will guess at its meaning rather than pass it by. In addition, any familiarity in a word may arrest the second-language reader's attention and detract from top-down, contextual processing. This suggests that ESL teachers should recognize the importance of word unit processing and encourage guessing when contextual clues are available; be sensitive to the reduced ability to guess among low proficiency students with limited linguistic knowledge; avoid exclusive use of over-redundant texts; acknowledge that word-analysis is a natural strategy even though sometimes misleading; and provide practice in both guessing from context and word-level graphophonemic accuracy, thus building both flexibility and efficient access to word meaning in memory. (MSE)

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Patterns and Perils of Guessing in Second Language Reading

Margot Haynes

INTRODUCTION

In the last twenty-five years, the active nature of language acquisition and language use has gained increasing recognition (Chomsky 1959; Brown 1973; Cromer 1976; Dulay and Burt 1978). Human beings learn and comprehend language not only through perceiving but also through their own internal structuring of linguistic messages. Such a top-down view of human cognition emphasizes the active contribution of perceivers who reshape external stimuli via their own self-generated input—such as their background knowledge and natural systematicity—while constructing their individual models of the world. This top-down description of human cognition has affected our characterization of all modes of language use, including reading.

Psycholinguistic models of reading describe readers as active samplers of text who combine text context with their knowledge about writing, language, and the world in general in order to read more efficiently, using prediction to take short-cuts in bottom-up processing of letters and words (Goodman 1967; Smith 1978). The field of ESL has not been impervious to the claims of these top-down reading models. Teachers and textbook writers have developed methods which foster active reading, particularly in the area of vocabulary comprehension. Instead of presenting single meanings of isolated words, textbooks now often recommend that students guess at the meaning of unfamiliar words by using context clues.

Among the many ESL practitioners advocating this shift to the guessing of vocabulary from context (Clarke and Silberstein 1977; Kruse 1979; Hosenfeld,

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Arnold, Kirchofer, Laciura, and Wilson 1981), Twaddell (1973) has presented one of the most carefully reasoned arguments. Twaddell points out that, since words are almost always polysememic, teachers may mislead students by teaching single word meanings out of context. In addition, since most words in a language have only a low frequency of occurrence, dictionary precision and list memorization cannot ever provide language students with enough vocabulary to understand all the words they encounter while reading. Twaddell therefore recommends that ESL reading teachers focus on reading skills development rather than vocabulary building. By learning how to be better guessers, students can figure out the meanings of the many words in reading which they have not encountered before.

Twaddell and others also frequently draw an analogy between L1 and L2 reading. Twaddell points out that when native speakers encounter a new word in reading, they usually skip the unfamiliar item or guess at its meaning from context. Since this works well for the fluent L1 reader, Twaddell concludes that the L2 reader should develop similar ways of handling new words.

Many recent ESL reading texts are based on this analogy between L1 and L2 readers and also reflect the widespread acceptance of top-down models of reading, models which portray readers as generators of guesses who rely to a large extent on context clues while constructing the meaning of a text. As shown in Fig. 1, most recent ESL readers recommend that students focus on meaning rather than language or vocabulary development as they read in the second language. Since fast reading is considered the best way to grasp the main ideas of a text, many of these reading textbooks are designed to train ESL students to read more quickly. This leads to an emphasis on guessing the meaning of new vocabulary from context. It is thought that if a student stops to look up words in the dictionary, this will slow reading speed and thus weaken comprehension. If one learns to skip or guess from context, integrative reading can still take place. That is why many of these textbooks also advocate banning dictionaries from the reading class.

In addition, Clarke and Silberstein's (1977) distinction between reading skills and language skills is honored in several of these texts. Vocabulary development is classed as a language skill which does not necessarily belong in the reading class. However, the same texts which separate vocabulary from reading skills still implicitly acknowledge that mastery of vocabulary is an important part of second language reading development. Some of the texts provide exercises designed to help students practice word analysis and word formation skills. Also, many texts carefully recycle vocabulary several times in readings and exercises so that students get more than one exposure to new words. Thus these reading texts suggest a commitment to building vocabulary knowledge, yet all the while claiming that vocabulary learning and reading are separable.

Finally, several of these ESL texts try to develop vocabulary and guessing skills by adding redundancy to their reading passages. They often give definitions or extensive clues within the text when a new word appears. These texts are designed to encourage students to guess word meaning from context, but the context provided is unusually rich so that students will have a better chance at success when guessing.

These textbooks are quite consistent in their acceptance of the analogy between ESL reading and top-down models of fluent L1 reading. Nevertheless, this analogy is rendered questionable by recent research in both first and second language reading.

Fig. 1: Characteristics of some recent reading textbooks

Characteristics	Textbooks						
	Hirasawa + Markstein 1974	Baudoin et al. 1978	Long et al. 1980	Abraham + Mackey 1982	Zukowski/ Faust et al. 1982	Zukowski/ Faust et al. 1983	Connely + Sims 1982
1. Reading for meaning = primary	X	X	X	X	X	X	X
2. Fast reading to be encouraged	X				X	X	X
3. Vocabulary guessing in context to be encouraged	X	X	X	X	X	X	X
4. Dictionaries not to be used while reading	X			X		X	X
5. Reading skill development + vocabulary development = separate	X	X	X				X
6. Word-form exercises included	X	X	X	X			
7. Vocabulary reused in textbook				X	X	X	X
8. Text provides strengthened redundancy			X	X	X	X	X

First of all, though psycholinguistic models of reading emphasize the contributions of linguistic and world knowledge to the reading process, other research on the development of L1 reading indicates that such top-down processing is only part of the story. Rapid, precise recognition of letters and words, that is, bottom-up, more input-constrained processing, must be mastered before fluent reading can take place (Biemiller 1970; Perfetti, Goldman, and Hogaboam 1979). In fact, there is evidence that becoming a more fluent, efficient L1 reader involves

increasing one's bottom-up processing of print and decreasing syntactic and semantic guesswork (Stanovich, West, and Feeman 1981). Whether this is also true for L2 reading acquisition remains an open question.

A second concern about the analogy between L1 and L2 reading is raised by findings that L2 reading poses special difficulties, even for individuals who are skilled readers in their first language (Clarke 1979). Although intermediate L2 students seem to handle syntactic clues in reading as well as do L1 readers and more advanced L2 students, they seem less skilled in their use of semantic and discourse clues (Cziko 1978; 1980). Another gap between L1 and L2 readers is the striking difference in their speed of reading. For example, in Israel, Cohen, Glasman, Rosenbaum-Cohen, Ferrara, and Fishman (1979) found that college students who were L2 readers of English needed between one and two hours to read 15 pages of a textbook, while native speakers finished the same task in only twenty minutes. The major factor slowing down ESl readers is not the number of eye fixations per line nor the number of regressions they make while reading; rather, Tullius (1971) and Oller (1972) report that, at least for college-age ESL students, average fixations last much longer for L2 readers than they do for native speaking readers.

There is no clear experimental evidence explaining these longer visual fixation times, but a strong possibility involves the time required for lexical access, that is, the time it takes for a reader to match the printed word to a word meaning in memory. Macnamara (1970) compared the time required to match a known word to its corresponding picture. Readers took significantly longer to decide on the match when the word was in their second language than when it was a word in their native tongue. If it takes readers longer to access lexical meaning in the second language, that is, to remember what a given word means, readers will naturally take longer on each fixation on the page.

Given these differences between L1 and L2 reading, one might question the analogy between them which underlies the emphasis on guessing in current ESL reading textbooks. Not only has reading acquisition been shown to require mastery of bottom-up processes, but also L2 readers have been shown to differ in several important ways from fluent L1 readers. Therefore, it seems premature to claim that since skilled L1 readers often skip or guess at new words in context we must teach ESL students to do the same when they encounter new words.

AN OBSERVATIONAL STUDY OF GUESSING

A reasonable way to evaluate the guessing-from-context recommendations of ESL texts is to observe how ESL readers guess at unfamiliar words. Can they do it successfully? In which situations are they most likely to succeed? What information do they use in making their guesses? Do students from different language backgrounds guess differently?

A study was designed to seek preliminary answers to these questions. Adult ESL students were asked to guess at problem words after they had read and recounted two short passages. Subsequent analysis of students' guessing successes and failures provides a clearer picture of how L2 readers go about guessing word meaning in context.

Method

Background data on the subjects is presented in Table 1. Volunteers were recruited from Michigan State University's English Language Center. Although approximately twenty students volunteered from each of the language backgrounds to be studied—Spanish, Japanese, and Arabic—it was decided to study the Tunisian Arabic speakers separately from other Arabic speakers. This decision resulted from observation of differences in reading speed between the two groups and from the fact that at least half of the schooling in Tunisia is in French rather than Arabic.

Table 1: Subject Background Data

Native Language	n	Age	Years of English Study	Time in U.S.	Proficiency Level	Instructional Emphasis in home country
Spanish	22	24.9	5.3 (1-10	4.1 mos.	18 low 4 high	grammar
Japanese	19	24.3	8.2 (6-12)	2.7 mos.	5 low 14 high	reading, writing, grammar
Arabic/ French (Tunisian)	11	19.1	3.0 (3-4)	1.6 mos.	0 low 11 high	all skills
Arabic	11	29.2	6.7 (2-11)	6.4 mos.	6 low 5 high	speaking + listening

According to the English Language Center's English Proficiency Exam, the Tunisian and Japanese groups consisted mostly of students with high English proficiency, while the Spanish group contained mostly lower proficiency students. This precluded separation of language background from proficiency variables, but it was still possible to observe the effects of language background in some of the guessing patterns.

The readings used were adaptations of two stories about animals (Passage A from an excerpt in O'Reilly and Streeter 1977; Passage B from one of the folktales in Binner 1966). The passages had parallel story structure and syntax. Both were two paragraphs long, with the second paragraph a flashback, increasing the difficulty level from that of simple chronological structure:

Passage A:

The young brill tapped his teeth together as he swam lazily in a wide circle around Brine Bay. It was such a peaceful spring afternoon that he felt absolutely on top of the world. "Today the sun is radiant and the waves are bimidor; I've got plenty to eat, the water has been getting warmer bit by bit, and I lead a most comfortable brill's life," he thought contentedly.

He had come into the world back in January, a splendid male of fourteen feet. Upon his arrival in the brill habitat, his enormous mother had nuzzled him softly and, having no arms or legs with which to hug him, had expressed her love for her offspring by circling him in the water. Afterwards, she led him up to the surface to give some blows from his spout. Finally, having fed him some milk, she took him on a tour of the area where he would be living from that day on.

Passage B:

The old baild licked his mouth happily as he lay on his side under the tall blue spruce. It was such a beautiful fall evening that he felt like taking it easy. "Tonight the moon is bright

and the wind is silidon; I've had plenty to eat, the people have probably gone home for the night, and I can enjoy a nice, quiet evening," the old baild thought contentedly.

He had been really hungry earlier that day, tired out from many a useless chase. Upon his discovery of the smell of meat cooking, he had crept up on a campfire abd, seeing no people or guns which could hurt him, had gotten his dinner quite easily by pulling it from the fire. Afterwards, he carried it in his mouth and ran up to the hilltop to tear it apart at his leisure. Finally, having finished his dinner, the baild looked around at the places where a hunter might come to find him.

Each passage contained two nonsense words. As in Homburg and Spaan (1982) and Walker (1981), nonsense words were used to make sure that no student would have previous knowledge of the words to be guessed. The nonsense words were placed so as to allow a comparison of global versus local context use. One of the nonsense words in each passage could be guessed by referring to the immediate sentence context; the other required integration of information throughout the passage. The locally defined word appeared only once in each passage, while the globally defined one appeared three times.

Individual interviews with students began with an informal discussion of their background of English study. Then the reading and retelling task was explained. Instructions were as follows: "Read through the passage one time and then tell me what you have understood from your reading." After reading each passage, the student was asked, "Tell me what you understood, what you remember about the story." The session was taped from the beginning of the first retelling.

After both readings and retellings, the student was shown each passage again and asked which words had made the story difficult to understand. As each word was pointed out, the student was asked to guess orally what that problem word might mean. After the student's guessing attempt was complete, the experimenter either confirmed the guess or, if it was completely inappropriate or if no guess had been ventured, gave the student a verbal explanation of the meaning in that context.

The background interview, readings, retellings, and discussion of problem words with guessing took from one to one-and-a-half hours.

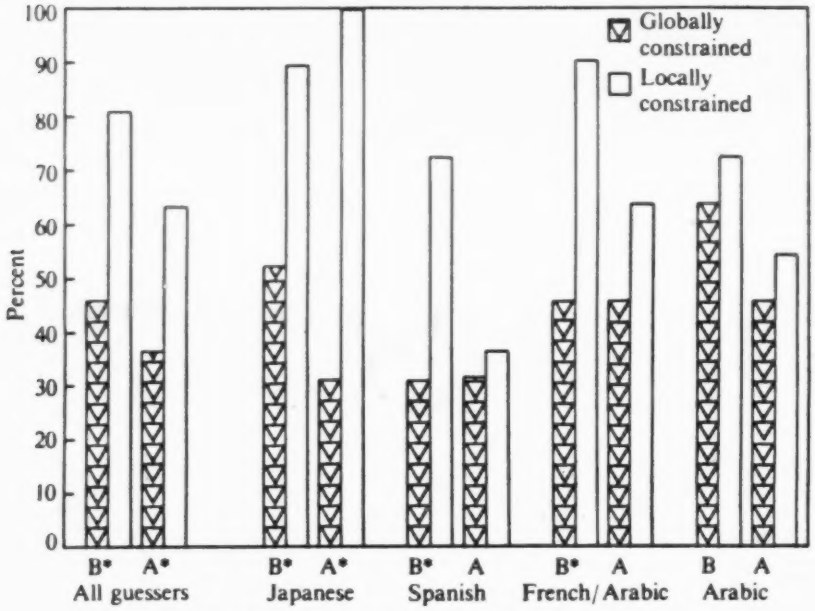
Results and discussion of nonsense word guessing

Since all students were unfamiliar with the nonsense words in each passage, these words provided a controlled set of data with which the success of guessing could be studied.

As shown in Figure 2, the group as a whole was quite successful at guessing nonsense words defined by local context. With words requiring an integrated comprehension of the passage as a whole, guessing was less successful. Fewer than half the students were able to guess that the main character was an animal.

When the sample is broken down into individual language groups, the same tendency is observed. All groups profited more from local context clues than they did from global ones. This difference was significant with Passage B for all groups except Arabic monolinguals, whose global guessing performance came close to their performance on local guessing. This difference between Arabic monolinguals and other groups may be due to the small sample size, but also might suggest a preference in the Arabic group for global processing. Clearly, further study with larger groups is needed to test this possibility. On the whole, though, local guessing appeared easier for L2 readers than global guessing.

Fig. 2: Proportion of readers making appropriate guesses for nonsense words in passages B and A



*$p < .05$ that differences between proportions are due to chance.

With Passage A, although the group as a whole succeeded better at guessing the locally defined word, *bimidor* (that is, guessing that the waves were small, smooth, or quiet), than the globally defined word *brill*, only the Japanese guessers showed a significant difference between local and global guessing. Readers in other groups experienced difficulty in local guessing because they did not know the meaning of the word *waves* (8 Spanish, 1 Arabic, and 2 Tunisians). Low proficiency may account for the fact that over a third of the Spanish speakers did not know what *waves* meant, though one Spanish speaker's pronunciation of this word as "wives", followed by a guess that it meant the opposite of "husbands", suggests that spelling pronunciation from the native language may have caused added difficulty in recognizing this word. Differences in L1 and L2 graphophonemic systems, plus the limited vocabulary knowledge of lower level students, both seem to limit second language readers' ability to make appropriate guesses. In other words, what may appear to be a transparent, guessable context to native English speakers may actually be incomprehensible for L2 readers, either because they mispronounce a clue word or simply do not know its meaning.

In summary, these students showed that even without special training in context use they could achieve a high rate of success when guessing at words which were locally defined. ESL readers do appear to have a natural ability to guess, but they are limited by their understanding of other words in the immediate context.

Therefore it is likely that lower proficiency students with less vocabulary knowledge will find guessing much more difficult. In addition, when ESL readers have to integrate longer sections of text in order to guess a word's meaning, they perform less well, even when the word appears several times. Guessing is apparently more difficult when comprehension of longer contexts is required. For such situations, students need strategies other than guessing from context. If *brill* or *baild* were real words, and if reading comprehension were the main goal of reading, consulting a dictionary or asking a native speaker would seem to be more efficient strategies than agonizing over the text trying to deduce the word's meaning from context.

Results and discussion of other guessing patterns

Limits of context clues. The importance of local context clues was confirmed by the pattern of guessing successes and failures observed for real words which were problem words for many readers. In those instances when more than half of the students reached appropriate meanings for an unfamiliar word, many of them relied on words from the immediate context when giving definitions. For instance, many students explained the word *tapped* as a way in which "he moved his teeth, *licked* as a way "he moved his mouth", *Brine Bay* as a place where he was swimming and *radiant* as meaning the sun was bright or shining.

In contrast to these contextually guessed words, several common problem words proved difficult to interpret. *Waves*, *splendid* and *enormous* in the first reading and *chase*, *crept up*, and *leisure* in the second reading were rarely guessed successfully by students. These words are not accompanied by any immediate context clues, so it is hardly surprising that they proved difficult to guess.

This demonstrates again that, in some cases, guessing from context is not a fruitful strategy. Students need to have other strategies to turn to when guessing from context fails them. There is a real danger that indiscriminately urging students to guess will result in so much frustration and failure for students that they completely reject the guessing approach, even when the context is sufficiently explicit to allow guessing to be successful.

Furthermore, one might question whether reading texts should supply a great deal of redundancy in an artificial manner. For one thing, this misleads the student about the nature of texts in English. In addition, it would seem more useful for students themselves to learn to recognize those cases in which context is of no help. Rather than making a completely random guess, students can then decide whether to skip the word as unimportant or get help from a dictionary. Just like an over-protective teacher, completely guessable texts may leave students without other strategies to fall back on when they encounter less redundant writings.

Noncontextual word-analysis guessing. ESL readers have been found to be successful guessers given adequate context, but the guesses observed through the study often showed students resorting to noncontextual strategies. They frequently analyzed an unfamiliar word to find a familiar morpheme within it. For example, with the problem word *tapped*, two Japanese students referred to their knowledge of *tap-dancing*, related it to the unit *tap* in the problem word, and achieved a precise definition of the unknown vocabulary item. Also, half of the Arabic readers succeeded in guessing *campfire* by analyzing it into "fire" and "an outdoors place".

This word-analysis strategy was not always successful, however. Spanish speakers and Tunisians tended to go astray when they analyzed *campfire* using

cognates from their native or schooled language. They interpreted the morpheme *camp* to mean a place with many people, like a military camp. Six Spanish readers actually defined *campfire* as a place for war, a battlefield. (This interpretation was probably reinforced by the mention of *guns* later in the same sentence.) The inappropriate meaning resulting from word-analysis had serious consequences for at least two Spanish readers, who based their entire story schema on this faulty guess, deciding in the end that *baild* actually meant a kind of soldier or a grade in the military. They interpreted the story to be about a soldier running away from battle. Thus, with cognate languages, word analysis has the potential for seriously misleading the student.

On the other hand, it would be foolish to teach Spanish or French speakers to ignore the similarities between their native language and English. Cognate recognition is too useful to be abandoned. With passage A, for example, even though *radiant* and *splendid* were problem words for a majority of Japanese and Arabic readers, they were not even mentioned as unfamiliar words by most Spanish and French readers.

Since cognates provide a useful knowledge base, one might predict that Spanish and French readers would use the word-analysis strategy more often than students from non-cognate backgrounds, but this did not appear to be the case. Three Japanese students, faced with the word *habitat*, tried to relate it to "habit" or "being used to something". Another Japanese reader made a valiant effort to relate *enormous* to "normal" or "abnormal". And students from every language background, more than half of all students interviewed, guessed at *offspring* using word analysis, defining it as "the end of spring" or "the end of a season".

Such misinterpretations may often result when teachers and textbooks encourage students to rely totally on guessing. After all, it is only natural to try to interpret new items on the basis of units one already knows. This strategy is useful if a stem morpheme is correctly isolated by the reader and if the reader already knows a relevant meaning for it. But opportunities for erroneous analysis abound. Students need instruction in the art of double-checking a guess with the context; if the context clashes with the word-analysis interpretation, then further checking with a native speaker or a dictionary would be advisable.

Mismatches in guessing. With word analysis, students match graphic units to words which they remember from previous encounters in English or their cognate language. In the examples above, remembered spelling was matched to the graphic form of the page. But one of the most surprising patterns observed was that ESL readers often make wrong guesses because of graphemic or phonemic *mismatches*,[2] the word they access in memory is spelled and/or pronounced differently from the word on the page. For example, three readers saw "top" in the word *tapped*, while another saw the morpheme "tape". One low-level Spanish reader, after giving an extremely appropriate retelling of the *brill* passage, discovered in rereading it that he had pictured a water animal because he had misrecognized the word *swam* as "swan"!

[2]The term *mismatch* is used in contrast to Goodman's (1967) term *miscue*. While a miscue is said to occur when an oral reading response fails to match the expected one, a mismatch occurs, not in fluent reading, but in deliberate guessing during which more time is available for study of the graphic form and for memory search.

Two Japanese readers guessed that *splendid* meant "to make wide or "spread". A Spanish reader guessed that *crept* might be a kind of pancake. And one Arabic reader who failed to point out *silidon* as a problem word responded, when questioned about it, that it meant "not often" (seldom). These examples demonstrate that students are attending to word shape, but there is a good deal of imprecision in matching graphophonemic shape to words in their lexical memory. This tendency was observed with students from all language backgrounds, although the few Spanish readers who had scored highest on English language proficiency tests had less difficulty with mismatches than did other students.

The processes leading to such mismatches are probably both top-down and bottom-up. They are relatively bottom-up in that the graphic shape of individual words exerts a strong influence on the guesses proposed. At the same time, however, they may be considered top-down, since students' background knowledge—such as their native language phonology, writing system, and the graphophonemic mapping of the writing system (Haynes 1981)—may cause them to misrecognize the graphic stimulus in the process of trying to match it to words in memory. Still, these mismatches are not top-down guesses in the usual sense (see Carrell 1983) of deriving from the reader's higher level linguistic and world knowledge.

In fact, one striking aspect of mismatches, as well as word-analysis guesses, was that they were frequently in conflict with the syntactic context. This is surprising considering Cziko's (1978) and Walker's (1981) finding that L2 readers are generally skilled in applying syntactic knowledge while reading and guessing. But in cases of word analysis and mismatches, it appeared as if the saliency of word shape overrode the reader's ability to attend to syntactic relations. It seemed as if the more familiar a word looked, the more difficult it was for L2 readers to shift attention away from graphophonemic form in order to fit a guess to the syntactic context.

This phenomenon can occur for L1 readers as well. To demonstrate the power of word-shape in reading, here are two sentences from a text used by Homburg and Spaan (1982) in which nonsense words were inserted in a text about the behavior of birds:

> And in some species, fledglings must even be *mexed* by their parents during their first autumn migration.
>
> Crohmann thus proved that the instinctive *grumpity* to fly develops in young birds with or without the opportunity to practice.

In these sentences, despite the fact that the underlined word is known to be a nonsense word, it is hard not to process it as a familiar word such as *vexed* or *mixed*, *grumpy* or *grumpiness*. The graphophonemic configuration of the unknown item dominates in the reader's initial processing of it, and it is a struggle to put such associations aside and attend to syntactic and semantic context. If familiar-looking words cause so much dissonance between word-shape and syntax processing for the native speaker, it is hardly surprising that word form is more salient than context for the L2 reader.

The uncertainty of familiarity. The guessing patterns discussed above demonstrate that word-unit processing is a major component of reading in both L1 and L2. But there is another reason that word shape holds the attention of L2 readers: in a second language, deciding whether a word is familiar or not takes extra time and effort. During the guessing interviews, students often hesitated when pointing out problem words. Sometimes they would report that they had seen a word before but had

forgotten its meaning; at other times, they would pick out a word as problematic, then suddenly realize that they did in fact know its meaning.

This uncertainty surrounding word recognition may well constitute a major difference between L2 readers and fluent L1 readers. The latter have large, well-practiced vocabularies and long experience recognizing words in print. They quickly know when a word is unknown and can easily decide to skip it. Second language readers, on the other hand, search for familiar units as they read, but are often unsure whether a word is really new or not. Thus it is not surprising that any flash of familiarity in a word arrests their attention, making the context fade into the background.

Perhaps researchers have never emphasized this point because the cloze technique has been the major method used for investigating prediction and guessing in L2 reading. With cloze tests, words to be guessed appear as blanks and thus cannot distract the reader by their graphemic structure. In non-cloze reading, however, readers attend to word form in order to decide whether a given word is stored in their mental lexicon or not. This appears to be a harder decision for L2 readers than for fluent L1 readers, one which may take more attention away from top-down, contextual processing.

Generalizability of this study. It might be argued that the importance of graphemic cues and word-unit processing observed in this study was an artifact of the task. Perhaps students were attending to word-level cues rather than larger context because they had already read through the passage once and, at the point of guessing, were only rereading for the purpose of identifying problem words.

This argument is weakened by converging evidence from other studies showing bottom-up processing to be central in the reading of L2 students. Cziko (1980) observed from L2 subjects' oral reading miscues that lower proficiency students seemed more focussed on surface graphemic shape and less on the semantic flow of ideas. Hatch, Polin, and Part (1974), using a letter cancellation task, found that less proficient L2 readers crossed out a given letter uniformly throughout a text, as if relying mainly on visual cues, while native speakers missed the letter when it occurred in unstressed or semantically unimportant contexts. Both of these studies suggest that L2 readers of lower proficiency attend more closely to visual cues in reading than do more proficient language users.

Another important indication that bottom-up word identification processes play a major role in L2 reading has been provided by Walker (1981). She used nonsense words to examine guessing strategies of high proficiency L2 students. She asked them to read an English text while reporting in their native language (Spanish) how they were going about understanding its meaning. Walker found that the preferred strategy when a nonsense word blocked the flow of meaning was that of pronouncing the word aloud. A frequent follow-up strategy was graphemic, that is, associating the nonsense word with another word, in English or Spanish, which had a similar spelling.

Walker (1981) argues that pronunciation and graphemic strategies should be discouraged by teachers, since in her study these rarely led to appropriate guesses, but it would seem rather that such *strategies*[3] are essential processing stages in

[3]The word *strategy* implies an element of choice in the use of ways to reach meaning while reading. If graphemic and maybe phonemic processing are necessary for lexical access, then they should be called something else than *strategies--basic processes*, perhaps.

normal reading. Although pronunciation and graphemic guesses are bound to fail with nonsense words, they are probably the most efficient means of access to the mental lexicon of L2 readers for most words in the text. Anticipating an up-coming word depends on sophisticated experience with syntactic and collocational relations which L2 readers may often lack, but retrieval of word meaning from memory can take place by looking directly at the word's shape or testing its sound against familiar vocabulary learned through spoken language experience. Although this study has pointed out many cases in which these procedures failed, they certainly succeeded for words which students did not point out as problems. Rather than deny that graphophonemic structure is important in L2 reading, teachers might help students to improve the accuracy of their word recognition so that they can increase the speed and efficiency of their lexical retrieval.

CONCLUSIONS

The importance of word-unit processing needs to be recognized in ESL teaching. First, precision of encoding spelling and pronunciation can be increased through oral and written practice of important vocabulary from reading. Discussion of the text, with some emphasis on accurate pronunciation of vocabulary, and text-related compositions, with students being encouraged to use vocabulary from the reading, are both ways in which vocabulary practice can take place in meaningful contexts. Also, dictionary work may be useful in helping students to separate words which look or sound similar. The goal of this vocabulary development should include accuracy in writing and pronunciation so that students can learn to distinguish new words efficiently in lexical memory.

Top-down practice should also be retained in ESL reading classes. Reading for meaning and guessing from context are both essential. Students need to develop flexibility in reaching meaning when their focus on word configuration and direct lexical retrieval fail. Learning to re-evaluate initial guesses is as important as learning to make a first guess. Not only context, but dictionary use, may provide additional ways of reaching meaning when other routes fail. The goal of top-down reading instruction should not be absolute independence from the dictionary, but rather an increase in students' flexibility, knowing where and how to look for meaning when the handiest sources of information fail to make sense.

From this preliminary observation of ESL readers' guessing strategies, useful insight has been gained into factors affecting the guessing process:

1. ESL readers are good guessers when the context contains immediate clues.
2. Insufficient context, global clues, or a student's lack of vocabulary knowledge may increase the difficulty of guessing.
3. Word analysis is used by students from all the language backgrounds studied.
4. Graphemic cues (in cognates, analyzed words, and mismatches) are highly salient and may override syntactic cues.
5. ESL readers are often uncertain as to whether a word is familiar or not and thus must attend to word structure before deciding to skip or guess.

These insights into the reading of second language learners indicate that their processing of written language is necessarily bottom-up as well as top-down. Clearly, much more observation and experimentation is needed to understand guessing

strategies, particularly as they differ with students of different language backgrounds. Still, the insights listed above provide support for the following suggestions, offered to ESL teachers who must make daily decisions about guessing in the reading class:

1. Encourage guessing when students have ample clues available in the immediate context.
2. Be sensitive to the fact that low proficiency students may experience more difficulty with guessing because of their limited linguistic knowledge.
3. Avoid exclusive reading of over-redundant texts: students need to practice judging for themselves whether guessing is or is not appropriate.
4. Acknowledge that word-analysis is a natural strategy, even though it can often be misleading: help students practice double-checking initial guesses of this sort with the context and other information sources such as the dictionary.
5. Provide practice in both guessing from context and word-level grapho-phonemic accuracy: the former builds flexibility while the latter develops more efficient access to word meaning in memory.

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